IFA
IRAN FINANCE ASSOCIATION
Iranian Journal of Finance
Print ISSN 2676-6337
Online ISSN 2676-6345

Designing a Total Interpretive Structural Modeling (TISM) for the Effectiveness Mechanism of Stock Liquidity in the Tehran Stock Exchange Companies

Hassan Heydari Soltanabadi
Ph.D Candidate, Department of Accounting, Kashan Branch, Islamic Azad University, Kashan, Iran. (Email: heydari_9@yahoo.com)

Hosein Panahian*
*Corresponding author, Associate Prof., Department of Accounting, Kashan Branch, Islamic Azad University, Kashan, Iran. (Email: papanahian@yahoo.com)

Hassan Hemmati
Associate Prof., Department of Accounting, Kashan Branch, Islamic Azad University, Kashan, Iran. (Email: hemmati_h433@yahoo.com)

Abstract

As the capital market becomes more competitive, one of the topics that has attracted the attention of many financial researchers in recent years is the liquidity of corporate stocks that because of the dynamics it can create in corporate financing, it is of strategic importance. The purpose of this research is designing a Model of Comprehensive interpretive/structural Mechanism of Effectiveness of Stock Liquidity Tehran Stock Exchange Companies. The one-year study period 2018-2019 in both qualitative analysis and quantitative analysis was conducted with the participation of two members of the panel. In the qualitative analysis section, this research identified through the combination of Delphi and the analysis of three components of the operational mechanism, the structural/governance mechanism, and the investor/mechanism of trading mechanism in the form of the effective statement on stock liquidity. And in the Comprehensive Interpretive / Structural Analysis section, with the participation of four Stock Exchange brokers, members of the panel presented a model based on a spectrum of the most influential statements to the least effective stock liquidity statements. The results show that the Delphi analysis of 25 indicators identified early in the meta-synthesis, 7 Index Remove and 2 indicators have been merged for a total of 16 statements were approved. In the quantitative section, based on a comprehensive interpretive/structural analysis, it was identified that the increase in the number of trading transactions as the component of operational mechanisms was identified as the most influential factor in stock liquidity

Keywords: Stock liquidity, Liquidity operating mechanism, Structural / strategic mechanism, Investment Trading Mechanism.

DOI: 10.22034/ijf.2020.230472.1126

Introduction

Capital markets in the economy are of considerable importance in booming the economic activity, investment, and optimal allocation of capital. In the course of the economic cycle or the process of privatization of state-owned companies, every year numerous firms step into the capital market and venture to the initial public offering (IPO) of their stocks on the Stock Exchange. Apart from the matter of privatization, when a firm grows, it needs liquidity for development that this process, through the company's liquidity stock capability in a competitive market, accomplishes dynamism (Bateni et al., 2013). Indeed, stock liquidity capability is based upon the functions of the type of investment, risk, and return that, depending on the strategies, structures, functions of corporations and investors, cover a level from liquidity to the illiquidity of stock (Blau et al., 2018).

On one side, it is worth mentioning for investors that if they decide to sell their assets, is there a good market for it, or how long does it take to sell it and convert it into cash? To put it another way, investors quickly pay attention to the financial resources of their investment and estimate the return resulting from the investment based on mental calculations. In such cases, liquidity capability in investment decisions is of great importance. That is to say, if investors are confident that, in the case of deciding to sell the assets, they can convert their asset into cash within a short time and there is a good market for the sale of assets, they will underestimate the illiquidity risk, and this will lead to their confidence for investment in the capital market. On the other hand, because it will bring more liquidity and increases the level of dynamism in economic development, liquidity capability for firms and capital markets could be of special importance (Chang & Young, 2019).

Put differently, liquidity in the capital market is of importance like other financial markets, for the existence of more liquidity in the stock market causes the boom of initial public offerings and a reduction in the cost and risk of underwriters and market makers, and this leads to allocation of capital with higher efficiency and results in a reduction in the cost of capital for issuers. Actually, as one of the factors influencing the returns of the securities, liquidity represents the situation of the investment environment in the capital market and the economies of the countries and exhibit the potential to attract the capitals of different markets with diverse trading strategies. Hence, understanding the stock liquidity capabilities whether at the macro-level (the level of capital market) or the micro-level (trading behavior of investors) could be a reason for the formulation of strategies by firms and analysts in order to generate a more

dynamism in the capital market. The important thing is that the amount of liquidity in the stock market is influenced by several factors. In a classification, perhaps we can refer to studies such as Chung et al. (2010), Kim & Verrecchia (1994), and Ascioglu et al. (2004) that considered the stock liquidity as a result of the total volume of liquidity in the community and the amount of volume of liquidity in the development of market efficiency.

Moreover, in the identification of factors affecting the stock liquidity, another group of researchers, such as Taddei (2007), Levine (1996), Wong & McAleer (2009) and Alnaif (2014), classified the liquidity of the market in terms of macro and micro dimensions which this distinction is on the basis of economic, market and industry criteria and the trading behavior criteria of the shareholders and investors. However, as it turns out, there is no certain and unified classification of stock liquidity both in terms of research and application, and this can be attributed to the ignorance of the level of research to the strategic issue of the capital market. Thus, this study strives to investigate the propositions related to the liquidity of the capital market relying on thematic analysis in similar studies analyzing the context of similar researches and to classify them in the form of the total interpretive structural modeling (TISM) from the most effective to the least effective ones so that a more coherent understanding of these factors based on practical mechanisms in the capital market is established.

Literature Review

Stock Liquidity

Most investors (with a short-term investment horizon) prefer highly liquid stocks compared to less liquid stocks since it will bring them greater returns. Indeed, according to the definition of Amihud & Mendelson (1986), liquidity is the degree to which an asset in the market is traded without influencing its price. In fact, Grecuhina & Timofejeva (2008) define liquidity as ease in trading securities. From another perspective, Chacko et al. (2008) consider the liquidity as the gap between the fundamental value of an asset and the price that the asset is currently traded. Liquidity can be intended an essential factor in profitability, and it is considered as a tool and mechanism to exhibit the proper status of the firm's stock from the perspective of financial affordance (Hajiannejad and Danesh Sararoudi, 2019).

The liquidity of a firm in the financial literature includes two concepts; the liquidity of its real assets and the liquidity of its stocks. An asset is a cash when it can be slowly converted into cash. This definition covers both real

assets and financial assets. The former concept is the liquidity of a firm's real assets that, according to it, a company is considered to be liquid if it has a high proportion of cash assets such as cash in its balance sheet. The latter concept is the stock liquidity of the company being traded. According to this concept, a firm is liquid if its stock enjoys high liquidity. The liquidity of a company's assets is determined by its real assets in the market, while its stock liquidity is can be determined in the financial markets (Mukityanto, 2015).

In his studies, Xu-Shen Zhou (2003) could identify a connection between these two concepts. In his view, the theoretical relationship between these two types of liquidity is not specified at first glance. In his proposed model, he introduces information asymmetry as an interface between the two concepts so that the less liquidity of a company's assets results in lowering the ability to transform them into other assets by the manager. The rigidity of assets leads to information asymmetry those results in high stock liquidity. For managers of companies with less liquid assets, it is difficult to convert these assets into other assets; i.e., the problem of asset replacement declines, and investment will be faced with difficulties. Therefore, if these managers do not seek to convert those assets of the company with less liquidity capability to assets with highly-liquidity capability, these assets will cause the agency costs for investors to be lower. Taking into account the previous investigations, the factors affecting the stock liquidity shall be separated in the form of the following table:

Table 1. Factors Affecting the Stock Liquidity

Factors Affecting the Stock Liquidity	Definitions	References
Institutional and Structural Factors of the Market	According to the report of the Committee on Emerging Markets of the International Organization of Securities Commissions (2007), the institutional and structural factors affecting the improvement of liquidity in the capital market include the following items: Raising the rate of free float stocks, providing the possibility of foreign participation in the market, increasing access to market, reducing the costs of transactions, improving the trading infrastructure of market, enhancing investment products available in the market, increasing the offering of securities, establishing links with other markets, restructuring the stock markets, and establishing communication with other markets allow stock exchanges to act profitably and, for attracting the international flows of orders, compete with each other.	Chung et al. (2010), Kim & Verrecchia (1994), and Ascioglu et al. (2004)
Firm Performance Variables	The relationship between firm performance measures and stock liquidity has been studied from different views. All of these perspectives believe that by improving the performance of business units, its stock liquidity will increase. Agency and	

	feedback theories are examples of these views. In summary, based on agency theory, managers for that to maximize their own interests try to improve the firm performance, and this improvement is taken into account by informed investors and causes an increase in the share trading. Besides, taking into account the feedback theory and regardless of agency theory, it can be concluded that companies, by providing better performance, will attract more informed investors, and this factor will lead to generating the demand and increasing the trade by investors and raising liquidity in the market.	Fang et al. (2009) and Banerjee et al. (2007)
Environmental Factors	Effective environmental factors, including the state of the business cycle of the economy (recession and expansion), financial cycles, financial and banking crises, structures of the country's financing system, etc. are exogenously determined and influence the stock market and their liquidity. Considering that the environmental condition of the economy, like the business cycle, has a direct impact on the status of most firms, hence, a change in the situation can affect the attractiveness of the stock market compared to other markets.	Taddei (2007), Levine (1996), Wong & McAleer (2009) and Alnaif (2014)
Economic Policy-making Factors	Policy factors are those in the authority of policymakers, and policymakers can influence the liquidity of the market by exerting different policies. Policies such as monetary, financial, budgetary, and currency policies can directly or indirectly impact the liquidity of the capital market and, overall, the performance of this market.	Aksoy & Basso (2014) and Amihud & Mendelson (2006)
Parallel Markets in the Stock Market	Variations and developments in other parallel financial markets (banks, foreign exchange markets, housing markets, etc.) change the liquidity in the markets taking into account the degree of substitution of markets. A wide range of studies in conjunction with the effect of financial markets on each other has been conducted. Changes in laws and regulations (such as changes in rates and so on) of other financial markets, if it affects the performance of markets, can be beneficial on the stock market and its liquidity. Generally, any factor influencing the risk and returns of parallel markets in the stock market can indirectly impress the attraction of liquidity in the stock market.	Bilson et al. (2001) and Peebles & Wilson (1996)

Therefore, relying on theoretical foundations, the research questions based on the nature of the analysis are as follows:

1. What are the components and propositions of stock liquidity of stock exchange companies?

2. What are the most influential propositions of stock liquidity of stock exchange companies?

Research Background

Chen et al (2019) in their research investigated Stock liquidity and corporate tax avoidance. They investigated firms with higher stock liquidity to engage less in extreme tax avoidance. The research period ranged from 1993 to 2010. The results showed that the effect of stock liquidity on tax avoidance is statistically significant and the higher the stock liquidity, the lower the tax avoidance. Chang & Young (2019) They conducted a study entitled Optimizing Stock Behavioral Portfolio in Investment with a focus on stock liquidity. In this study, which examined a combination of behavioral criteria along with the functional criteria of capital and economic markets, it was found that the most important factor in deciding on investment portfolios is the cognitive characteristics of investors based on functional analysis of capital and economic markets. Of course, the role of economic criteria is less effective. Blau et al (2018)

An analysis of the gap between the proposed price and the sell-off. In this study, qualitative analysis methods were used to identify the causes of this gap and the results were shown in both macro and micro dimensions economic and political causes as major factors in stock liquidity in the macro dimension and structural and information causes in the micro dimension affect stock liquidity. Ahmad (2016) In one study, he examined the effect of liquidity on corporate profitability. The study, which surveyed 115 companies between 2005 and 2014, found a positive and significant relationship between liquidity and profitability.

Methodology

On the basis of the methodology of social and behavioral sciences, research is separated from the perspective of three domains of the result, type of data, and aim. Accordingly, in terms of the result, this study falls into the category of development research because there is no clear coherence from the theoretical and conceptual perspectives in connection with the subject of the factors affecting the stock liquidity, and this research can generate a ground for the separation of these factors and further integration in it. As well as, in terms of the aim, this study falls into the category of descriptive/applied research with the purpose of a better understanding of greater transparency in the capital market. Ultimately, in terms of the data type, it should be mentioned that the study involves two phases of qualitative and quantitative sections. The strategy of data collection is inductive in the qualitative section and deductive in the quantitative section. To analyze the data, given the nature of the research,

meta-synthesis and Delphi analysis are used in the qualitative section as well, and interpretive/structural analysis is also employed to provide a comprehensive model concerning the effective mechanisms of stock liquidity in the capital market.

Statistical Population of the Research

Like the nature of the research, the statistical population includes two sections; so that academic experts participate in the qualitative section through the Critical appraisal Skills Programme (CASP) in the form of meta-synthesis and Delphi analysis. In the quantitative section, 20 Stock Exchange brokers and capital market analysts with a history of more than 5 years in the market participate. How to distribute the questionnaires in both sections is done based on previous coordination for participation, taking into account the nature of the research. The remarkable thing is that, in the selection of individuals, we tried to choose people who have sufficient knowledge on the subject of the research.

Findings

In this study, 33 research was approved in terms of the context. In the next step, based on the approach of Stirling (2001), the classification and separation of contexts in the form of components and propositions related to the subject of the research should be made. According to this approach, first, 31 research approved through 10 criteria of Critical appraisal Skills Programme (CASP) including the aims of the research, methodology, appropriate research design, sampling, data collection, reflexivity (research partnership relations/recognition of researcher bias), data analysis, ethical issues, findings, and value of the research are again fitted with the help of 19 members of the research panel (experts) to achieve a more coherent understanding of the nature of the research.

Critical appraisal Skills Programme (CASP) is a 10-50 point scale in which each participant gives a score of 1 to 5 to each of the 10 criteria mentioned. Number 1 is the lowest score and number 5 is the highest score. Based on the total scores given, studies obtaining a score below 30 will be removed from the continuation of the review according to the Critical appraisal Skills Programme (CASP) Guidelines (Keshavarz et al. 2017), and the research approved to enter into the stage of determining the research components and then the research indicators.

Table 2. Critical appraisal Skills Programmer (CASP) of Research Identified

Articles/Criteria of Critical appraisal Skills Programme (CASP)	Research Objective	Methodology Rationale	Research Design	Sampling Method	Data Collection Method	Interpretation of Findings	Ethical	Statistical Analysis Method	Theoretical Capability	Significance of the Study	**Sum**
Chang & Young (2019)	3	2	3	2	4	5	5	5	4	5	38
Nadauld et al. (2019)	3	3	3	3	3	4	3	4	4	3	33
Cenesizoglu & Grass (2018)	3	4	4	4	4	4	4	5	4	5	41
Blau et al. (2018)	4	5	4	4	3	4	4	3	5	4	39
Aldatmaz et al. (2018)	3	3	3	4	3	4	3	3	3	3	32
Tang &Yan (2017)	4	5	3	4	4	4	5	4	3	4	40
Lyocsa & Molnar (2017)	4	4	4	4	4	4	3	4	4	4	43
Apergis & Voliotis (2015)	3	3	3	2	2	2	4	2	5	3	29
Mukityanto (2015)	5	5	3	4	3	2	4	4	4	4	38
Norvaisiene & Stankeviciene (2014)	4	4	3	4	4	3	4	4	4	3	35
Alnaif (2014)	3	2	3	3	3	3	4	3	3	2	29
Bhattacharya et al. (2011)	3	2	3	2	4	5	5	5	4	5	38
Collver (2009)	3	3	4	3	4	3	4	3	3	4	34
Cheng (2007)	4	4	3	4	3	3	3	3	4	4	35
Gorkitiisunthorn & Jumreornvong (2006)	3	3	3	3	4	3	3	3	4	3	32
Amihud and Mendelson (2006)	3	3	3	4	3	4	3	3	3	3	32
Ascioglu et al. (2005)	4	3	4	4	4	4	4	4	3	4	39
Dey (2005)	2	2	2	2	2	3	4	3	2	2	24
Lacker & Richardson (2004)	3	4	4	3	3	4	3	3	3	4	34
Claessens et al. (2003)	3	4	4	4	4	4	4	5	4	5	41
Dennis & Strickland (2003)	3	4	3	3	3	4	3	4	4	4	35
Clarke & Shastri (2001)	4	4	4	4	3	4	3	3	3	4	32
Neal & Wheatley (1998)	5	5	3	4	3	2	4	4	4	4	38
Chavoshi Najafabadi (2019)	3	3	3	3	3	3	3	3	3	4	31
Niknafs & Yeganeh (2019)	3	3	2	2	2	2	2	2	2	2	22
Jafari Seresht et al. (2017)	3	4	5	4	5	4	4	4	5	4	42
Ebrahimi & Farnaghi (2016)	4	5	4	4	3	4	4	3	5	4	39
Zamani & Faghani Kandari (2016)	4	4	3	4	4	3	4	4	4	3	35
Bateni et al. (2013)	3	3	3	3	3	4	3	3	3	3	31
Ahmadpour & Baghban (2014)	2	3	2	1	2	2	3	2	2	2	21
Namazi et al. (2009)	3	3	3	4	3	4	3	3	3	3	32
Yahya Zadeh far & Khorramdin (2008)	2	1	1	1	1	2	2	1	1	1	13
Ahmadpour & Rasaiyan (2007)	3	2	3	3	4	4	4	3	4	4	34

Considering the explanations given and concerning the score below 30, six studies of Apergis & Voliotis (2015), Alnaif (2014), Dey (2005), Niknafs & Yeganeh (2019), Ahmadpour & Baghban (2014), and Yahyazadehfar & Khorramdin (2008) were eliminated, and other approved studies are used in the next step to determine the components of the research. At this stage, based on the model that has been designed according to the following table, all components examined in the research approved are provided in the column of the table (3), and approved studies are placed in each line. The component that gained the highest frequency based on half of the approved studies is determined as the research component.

Table 3. Determining the Main Components of the Research

Researchers	Governance Attributes	Firm Characteristics	Behavioral Factors	Political Features	Family Ownership	Costs of Order Execution	Operational (Technical) Features	Accounting Methods	Structure of the Board
Chang & Young (2019)	-	-	✓	-	✓	-	-	-	✓
Nadauld et al. (2019)	-	-	✓	-	-	-	-	-	✓
Cenesizoglu & Grass (2018)	-	-	✓	-	-	-	✓	-	-
Blau et al. (2018)	✓	-	✓	-	-	-	✓	-	-
Aldatmaz et al. (2018)	-	✓	-	✓	✓	-	✓	-	-
Tang &Yan (2017)	-	-	✓	-	-	-	✓	-	-
Lyocsa & Molnar (2017)	-	-	✓	-	✓	-	✓	-	-
Mukityanto (2015)	-	✓	-	-	✓	-	-	✓	-
Norvaisiene & Stankeviciene (2014)	-	✓	-	✓	✓	-	✓	-	-
Bhattacharya et al. (2011)	✓	✓	-	-	-	-	✓	-	✓
Collver (2009)	✓	-	✓	✓	-	-	✓	-	-
Cheng (2007)	-	✓	✓	-	-	-	✓	✓	-
Gorkitiisunthorn & Jumreornvong (2006)	-	✓	-	✓	-	✓	-	-	-
Amihud and Mendelson (2006)	-	✓	✓	-	-	✓	-	-	-
Ascioglu et al. (2005)	-	✓	-	-	✓	-	-	-	✓
Lacker & Richardson (2004)	-	✓	✓	-	-	✓	-	✓	-
Claessens et al. (2003)	-	✓	-	✓	-	-	✓	-	-
Dennis & Strickland (2003)	-	✓	-	-	-	-	-	✓	-
Clarke & Shastri (2001)	-	✓	-	✓	-	✓	-	-	-
Neal & Wheatley (1998)	✓	-	✓	✓	-	-	✓	-	-
Chavoshi Najafabadi (2019)	✓	✓	-	-	✓	-	-	-	-
Jafari Seresht et al. (2017)	-	-	✓	-	-	✓	-	-	-
Ebrahimi & Farnaghi (2016)	✓	-	✓	-	-	-	-	-	-
Zamani & Faghani Kandari (2016)	-	-	✓	✓	-	-	-	-	-
Bateni et al. (2013)	-	-	-	-	-	-	✓	-	-
Namazi et al. (2009)	✓	✓	-	-	✓	-	-	-	-
Ahmadpour & Rasaiyan (2007)	✓	-	-	-	✓	-	✓	-	-
Total Frequency	8	**14**	**14**	8	9	5	**15**	3	3

As can be observed, the three general components of firm characteristics, behavioral factors, and technical (operational) features had the greatest frequency under the conceptual and specialized titles in the approved research. It is important to note that some of the components placed in the column may conceptually have an essential role in liquidity but may have not obtained enough score as the main component due to lack of being at the macro level and provided in the form of propositions. Hence, considering the total scores of distributions gained, we attempted to determine the research propositions. Table (4) represents the research propositions in the form of a 7-item scale checklist to enter the stage of Delphi analysis.

Table 4. Determining the research propositions in the form of a 7-item scale checklist

Components	Propositions	1	2	3	4	5	6	7
Operational (Technical) Mechanisms	Raising trade volume by balancing the bid price to buy or sell stock							
	Increasing the frequency of transactions							
	Enhancing the monetary volume of stock trading							
	Decreasing the costs of wrong selection through asymmetry of information							
	Increasing the stock turnover through market makers							
	Increasing the percentage of transaction days during the year through market makers							
	Increasing the liquidity capability of real assets such as accounts receivable and inventory							
	Raising the level of earnings quality							
	Upgrading the psychological motivation of investors by increasing the return on total assets							
Structural Governance Mechanisms	Selecting a cohesive board of directors composition							
	Reducing the influence of the high concentration of family ownership on the board of directors							
	Restructuring of pyramid ownership							
	Enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company							
	Choosing a high-quality auditor							
	Increasing the level of effective surveillance over management decisions							
	Consolidating the internal controls through establishing the independence of internal auditors							
	Reducing the CEO duality							
Investors' Trading/	Stock selection based on the investment horizon							

Behavioral Mechanisms	Equalizing the expected return based upon capital cost							
	Employing specialized consultations for stock on the shelf							
	Unknown identity of the traders							
	Unknown nature of the order at a specified price							
	Understanding the market and industry intended							
	Having specialized knowledge for stock selection							
	Upgrading the ability to invest in converting financial assets to cash at a price similar to the price of the last transaction							

Delphi Analysis

The Delphi analysis is a decision-making technique on the basis of expert opinion, which is done in some stages for rounds to reach the theoretical saturation point. The point where the reliability of the contexts identified has been approved. Accordingly, at this stage of the analysis, Delphi analysis is conducted with the help of two criteria of average and agreement coefficient. Table (5) indicates the Delphi analysis of the identified propositions:

Table 5. The first round of Delphi analysis for the identified propositions

Components	Propositions	Mean	Measure of agreement	
Operational (Technical) Mechanisms	Raising trade volume by balancing the bid price to buy or sell stock	4	0.50	Merge
	Increasing the frequency of transactions	5	0.7	
	Enhancing the monetary volume of stock trading	5	0.72	Confirm
	Decreasing the costs of wrong selection through asymmetry of information	4	0.40	Removed
	Increasing the stock turnover through market makers	3.50	0.33	Removed
	Increasing the percentage of transaction days during the year through market makers	5.10	0.75	Confirm
	Increasing the liquidity capability of real assets such as accounts receivable and inventory	5.10	0.75	Confirm
	Raising the level of earnings quality	5.20	0.80	Confirm
	Upgrading the psychological motivation of investors by increasing the return on total assets	3.5	0.35	Removed
Structural Governance Mechanisms	Selecting a cohesive board of directors composition		0.90	Confirm
	Reducing the influence of the high concentration of family ownership on the board of directors	5.20	0.80	Confirm

	Restructuring of pyramid ownership	3	0.25	Removed
	Enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company	5.10	0.75	Confirm
	Choosing a high-quality auditor	4	0.40	Removed
	Increasing the level of effective surveillance over management decisions	3	0.25	Removed
	Consolidating the internal controls through establishing the independence of internal auditors	5.20	0.80	Confirm
	Reducing the CEO duality	5.20	0.80	Confirm
Investors' Trading/ Behavioral Mechanisms	Stock selection based on the investment horizon	5	0.7	Confirm
	Equalizing the expected return based upon capital cost	5	0.72	Confirm
	Employing specialized consultations for stock on the shelf	2.5	0.20	Removed
	Unknown identity of the traders	5.30	0.85	Confirm
	Unknown nature of the order at a specified price	6	0.80	Confirm
	Understanding the market and industry intended	5.20	0.80	Confirm
	Having specialized knowledge for stock selection	5.20	0.80	Confirm
	Upgrading the ability to invest in converting financial assets to cash at a price similar to the price of the last transaction	4	0.40	Removed

As seen in the above table, the two criteria of agreement coefficient and average and determine the removal or approval of the index in question. In this connection it should be stated, taking into account a 7-item scale, the indicators obtained an average 5 and higher than 5 and the indicators gained an agreement coefficient of higher than the desired level of 0.50 are approved. Accordingly, concerning the results of Table (), based on the two criteria of average and agreement coefficient, it was found that the following 8 indices were eliminated:

1. Decreasing the costs of wrong selection through asymmetry of information
2. Increasing the stock turnover through market makers
3. Upgrading the psychological motivation of investors by increasing the return on total assets
4. Restructuring the pyramid ownership
5. Choosing a high-quality auditor
6. Increasing the level of effective surveillance over management decisions
7. Employing specialized consultations for stock on the shelf
8. Upgrading the ability to invest in converting financial assets to cash at a price similar to the price of the last transaction

Furthermore, concerning the results gained from two indicators of raising the trade volume by balancing the bid price to buy or sell stock and enhancing the monetary volume of stock trading were merged since they have been merged at the discretion of the researchers considering boundary scores they earned and given their close concepts with each other. However, to achieve empirical adequacy, we remove the deleted indicators from the checklist again. According to the arrangements accomplished, the score checklists will be distributed among the members of the panel (experts). In this section, it is attempted that empirical adequacy to be attained.

Table 6. The second round of Delphi analysis

Components	Propositions	Mean	Measure of agreement	
Operational (Technical) Mechanisms	Raising trade volume by balancing the bid price to buy or sell stock	5.20	0.80	Confirm
	Enhancing the monetary volume of stock trading	5.20	0.80	Confirm
	Increasing the percentage of transaction days during the year through market makers	5.30	0.85	Confirm
	Increasing the liquidity capability of real assets such as accounts receivable and inventory	6	0.90	Confirm
	Raising the level of earnings quality	5.30	0.85	Confirm
Structural Governance Mechanisms	Selecting a cohesive board of directors composition	6	0.90	Confirm
	Reducing the influence of the high concentration of family ownership on the board of directors	5.20	0.80	Confirm
	Enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company	5.30	0.85	Confirm
	Consolidating the internal controls through establishing the independence of internal auditors	5.20	0.80	Confirm
	Reducing the CEO duality	5.30	0.85	Confirm
Investors' Trading/ Behavioral Mechanisms	Stock selection based on the investment horizon	6	0.90	Confirm
	Equalizing the expected return based upon capital cost	6	0.90	Confirm
	Employing specialized consultations for stock on the shelf	5.25	0.85	Removed
	Unknown identity of the traders	5.20	0.80	Confirm
	Unknown nature of the order at a specified price	5.30	0.85	Confirm
	Understanding the market and industry intended	5.25	0.85	Confirm
	Having specialized knowledge for stock selection	6	0.90	Confirm

According to the results gained, it was found that all indicators were approved, and empirical adequacy was generated. Hence, considering the results obtained, 16 approved indicators to perform the analysis in the quantitative section shall be examined in the form of Total Interpretive Structural Modeling (TISM).

Total Interpretive Structural Modeling (TISM)

This analysis is an advanced hierarchical analysis, which is conducted based upon the qualitative propositions of the qualitative section in the form of matrix structure scales by the participants of the quantitative section. The Total Interpretive Structural Modeling (TISM) is a comprehensive analysis method that, in addition to examining the vertical and horizontal relationship, explores the diagonal relationship between the propositions. Accordingly, the approved propositions must be initially coded:

Table 7. Determining the abbreviated codes for matrix analysis

Propositions	L
Raising trade volume by balancing the bid price to buy or sell stock	L1
Enhancing the monetary volume of stock trading	L2
Increasing the percentage of transaction days during the year through market makers	L3
Increasing the liquidity capability of real assets such as accounts receivable and inventory	L4
Raising the level of earnings quality	L5
Selecting a cohesive board of directors composition	L6
Reducing the influence of the high concentration of family ownership on the board of directors	L7
Enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company	L8
Consolidating the internal controls through establishing the independence of internal auditors	L9
Reducing the CEO duality	L10
Stock selection based on the investment horizon	L11
Equalizing the expected return based upon capital cost	L12
Employing specialized consultations for stock on the shelf	L13
Unknown identity of the traders	L14
Unknown nature of the order at a specified price	L15
Understanding the market and industry intended	L16
Having specialized knowledge for stock selection	L1

Following the formation of the reachability matrix, the indirect relations between propositions, i.e., the advantages of Total Interpretive Structural Modeling (TISM) over Interpretive Structural Modeling (ISM), are used to investigate other dimensions. Otherwise stated, any pairwise comparison should be thoroughly interpreted by answering the interpretive question expressed in the previous step to evolve ISM into TISM. For pairwise comparisons, the *i*th proposition is compared pairwise with all elements, from (i + 1) the element to *n*th element. For each relationa the ansa er is either "Y" or """" If the answer is yes, i,e,, , ,, " the reason is stateda Otherwise, if the answer is no, i,e,, , """" the pair of aariables considered by the participants should be commented on.

Table 8. Pair comparison between propositions based on matrix form

Yes/No	***Z1 To Z.***	**No**
L1 **Raising trade volume by balancing the bid price to buy or sell stock**		
Yes ☒ No ☐	L1 – L2	1
Yes ☐ No ☒	L2 – L1	2
Yes ☐ No ☒	L1 – L3	3
Yes ☐ No ☒	L3 – L1	4
Yes ☒ No ☐	L1 – L4	5
Yes ☐ No ☒	L4 – L1	6
Yes ☐ No ☒	L1 – L5	7
Yes ☒ No ☐	L5 – L1	8
Yes ☐ No ☒	L1 – L6	9
Yes ☐ No ☒	L6 – L1	10
Yes ☐ No ☒	L1 – L7	11
Yes ☐ No ☒	L7 – L1	12
Yes ☐ No ☒	L1 – L8	13
Yes ☐ No ☒	L8 – L1	14
Yes ☐ No ☒	L1 – L9	15
Yes ☐ No ☒	L9 – L1	16
Yes ☐ No ☒	L1 – L10	17
Yes ☐ No ☒	L10 – L1	18
Yes ☒ No ☐	L1 – L11	19
Yes ☐ No ☒	L11 – L1	20
Yes ☐ No ☒	L1 – L12	21
Yes ☐ No ☒	L12 – L1	22
Yes ☐ No ☒	L1 – L13	23
Yes ☐ No ☒	L13 – L1	24
Yes ☐ No ☒	L1 – L14	25
Yes ☐ No ☒	L14 – L1	26
Yes ☐ No ☒	L1 – L15	27
Yes ☐ No ☒	L15 – L1	28
Yes ☐ No ☒	L1 – L16	29
Yes ☐ No ☒	L16 – L1	30

Now, the SSIM must be formed based on polewise and pairwise comparisons. For pairwise comparisons, the *i*th proposition is compared pairwise with all elements, from (i + 1)th element to *n*th element. For each rel,tion, the answer is either "Y" or ".. " If the answer is yes, i,e,, ",, " the reason is stated. In this case, the interpretive logic of paired relations is indicated in the basic scientific-logical interpretive form. In this step, the

relationships are entered as a reachability mxtrix as “” or “” demonstrated in Table 9. According to this tablea“” is assigned to cells with w” and 0 to cells with w”” This mxtrix is obtained by transforming an SSIM into a binary matrix of 0 and 1.

Table 9. Reachability Matrix (RM)

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16
L1	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1
L2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
L3	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1
L4	1	0	1	1	1	0	1	1	1	1	1	1	0	0	0	1
L5	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
L6	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	1
L7	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0
L8	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	1
L9	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
L10	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	1
L11	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1
L12	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	1
L13	0	0	1	0	1	0	0	0	1	0	1	0	1	0	0	1
L14	0	0	0	0	1	1	0	0	1	0	1	0	0	1	0	1
L15	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	1
L16	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1

Then, at this stage, the formation of scores is done based on the interaction of the compared indicators to generate a self-interaction reachability matrix.

Table 10. Reachability matrix in terms of the transitivity of the relationship between the propositions

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	Influence Power
L1	1	0	1	0	1	0	1	0	*1	0	*1	0	*1	*1	0	1	9
L2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
L3	0	0	1	0	1	0	0	0	*1	0	1	0	1	0	0	1	6
L4	1	0	1	1	1	*1	1	1	1	1	1	1	*1	*1	0	1	14
L5	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
L6	0	0	0	0	1	1	0	0	1	0	*1	0	0	1	0	1	6
L7	1	0	1	0	1	0	1	0	1	0	*1	0	1	*1	0	1	9
L8	*1	0	*1	1	1	*1	0	1	1	1	*1	0	*1	0	0	1	12
L9	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	3

L10	0	0	0	0	1	1	0	0	*1	1	*1	0	1	1	0	1	
L11	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	
L12	1	0	*1	1		*1	0	0	1	0	*1	1	1	0	0	1	
L13	0	0	1	0	1	*1	0	0	1	0	1	0	1	0	0	1	
L14	0	0	0	0	1	1	0	0	1	0	1	0	0	1	0	1	
L15	0	0	1	0	1	*1	0	0	0	0	1	0	*1	*1	1	1	
L16	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
	6	1	9	4	16	9	5	3	13	4	13	3	9	9	2	15	

As observed in the above table, the conceptual symbols assigned based on the mode index became scores 0, 1, and 1 * concerning the definition of conceptual relationships to numbers according to the previous table.

Then, to determine the relationships between the variables, the output set, the input set, and the commonalities must be initially identified. The score for determining the level and priority of the variables of the reachability set and the antecedent set for each variable are determined. The reachability set of each variable includes variables that we can reach them through this variable, and the antecedent set includes variables based on them this variable can be reached.

Next, the commonalities of the reachability set and the antecedent set of all the factors are determined and, in the case of an equality of reachability set with its commonality set, the factor (factors) is considered as the top level. The level refers to the designed layers of the final model. In order to obtain other levels, the previous levels should be removed from the matrix, and the process repeated. After determining the levels, the resulting matrix is sorted in order of levels again that the new matrix is called a cone matrix. Put differently, after determining the output elements, the input elements, and the commonalities, the index which has the same output elements and commonalities is determined as the first level and the least effective internal outcome of the stock liquidity. After determining this level, i.e. the least effective level of internal consequences, we will remove the index and examine the same parameters of the input elements and commonalities, and choose it as the next level. This operation continues as long as the components constituting all levels of the system to be identified.

Table 11. The output and input set elements and commonalities of propositions

Level	Intersection set	Antecedent set	Reachability set	Abbreviation
VI	1.7	1.2.4.7.8.12	1.3.5.7.9.11.13.14.16	L1
VIII	2	2	1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16	L2
V	3.16	1.2.3.4.7.8.12.13.15	3.5.9.11.13.16	L3
VII	4.8.12	2.4.8.12	1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16	L4
I	5	1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16	5	L5
IV	6.14	2.4.6.8.10.12.13.14.15	5.6.9.11.14.16	L6
VI	1.7	1.2.4.7.8	1.3.5.6.7.8.9.10.11.13.16	L7
VII	4.8	2.4.8	1.3.4.5.6.7.8.9.10.11.13.16	L8
III	9	1.2.3.4.6.7.8.9.10.11.12.13.14	5.6.16	L9
VI	10	2.4.8.10	5.6.9.11.14.16	L10
IV	11.14	1.2.3.4.6.7.8.9.10.11.12.13.14.15	5.9.11.14.16	L11
VII	4.12	2.4.12	1.2.3.4.5.6.9.11.12.13.16	L12
V	3.13	1.2.3.4.7.8.9.10.12.13.15	3.5.6.9.11.13.16	L13
IV	6.11.14	1.2.4.6.7.10.11.14.15	5.6.9.11.14.16	L14
VI	15	2.15	3.5.6.11.13.14.15.16	L15
II	16	1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16	5.16	L16

As the results demonstrate, L5 i.e. the proposition of raising the level of earnings quality is recognized as the least effective criterion for stock liquidity and L2 i.e. the proposition of increasing the frequency of transactions as the most effective criterion for stock liquidity in Tehran Stock Exchange companies, respectively.

On the basis of Figure (2) and analysis of the cone matrix, it became clear that the total number of stock liquidity propositions in the capital market includes 8 levels ranging from the most effective to the least effective propositions. Accordingly, the most effective proposition concerning the stock liquidity of capital market companies is the increase in the frequency of transactions (L2) as a statement of the component of operational (technical) mechanisms. Moreover, based on the analysis, it was found that the least effective proposition concerning the stock liquidity is the enhancement in earnings quality (L5) as a statement of the component of operational (technical) mechanisms. Besides, indirect relationships between the propositions are indicated with a dashed line. The most effective indirect propositions in stock liquidity include enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company (L8) as a proposition of structural/governance mechanisms, enhancing the monetary volume of stock trading through balancing the bid price to buy or sell stock (L1) as a proposition of operational (technical) mechanisms, reducing the influence of the high concentration of family ownership on the board of directors (L7) as a proposition of structural/governance mechanisms, reducing the CEO duality (L10) as a

proposition of structural/governance mechanisms, understanding the market and industry intended (L15) as a proposition of investors' trading/behavioral mechanisms. As is known, in this section, structural/governance mechanisms have the greatest effect on the mediating role in stock liquidity.

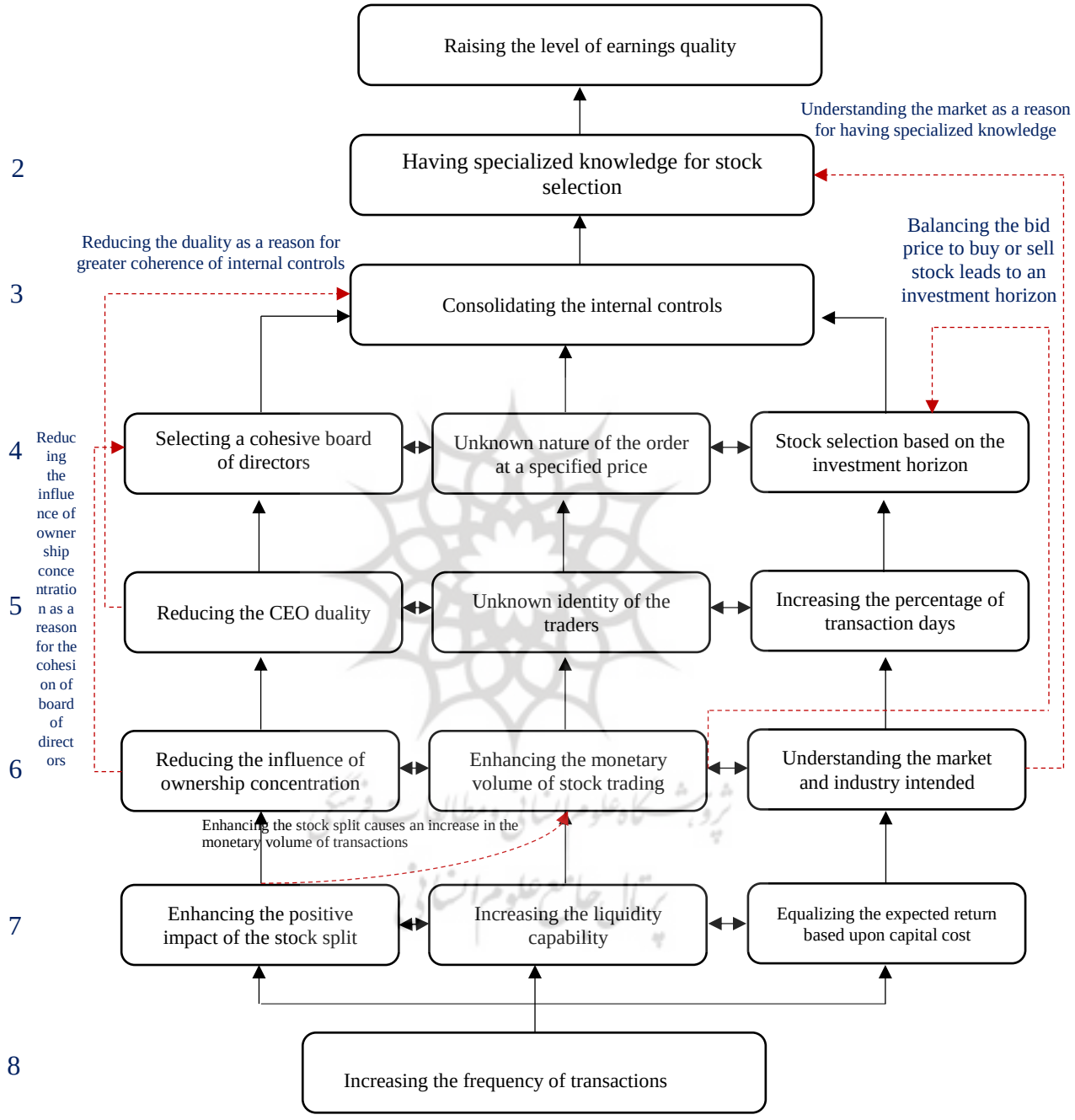

Figure 2. The hierarchical levels of the most effective propositions for stock liquidity

Conclusion

With regard to the importance of stock liquidity factors in the capital market, in this study, it was attempted that, by combining qualitative and quantitative methods, while identifying propositions related to stock liquidity, the most effective of these propositions to be identified based upon the total interpretive/structural modeling (TISM). The results in the meta-synthesis and Delphi analysis section revealed that out of 33 external and internal studies examined, 25 propositions in the form of three components of operational (technical) mechanisms, structural/governance mechanisms, and investors' trading/behavioral mechanisms were identified. During the two stages of Delphi analysis, 7 propositions were removed, and 2 propositions were merged. Finally, in the second stage of Delphi analysis, a total of 16 propositions achieved the empirical adequacy, which was approved based on the participation of members of the panel (experts).

Then, in the total interpretive/structural modeling (TISM) section, through the participation of 20 stock exchange brokers and capital market analysts via matrix questionnaires, a total of 16 propositions approved as stock liquidity measures were prioritized at 8 levels from the least effective to the most effective propositions related to stock liquidity. According to the results in this section, it was found that increasing the frequency of transactions (L2) as a proposition of the operational (technical) mechanisms of firms is the most effective factor in stock liquidity in a competitive market. Indeed, increasing trading volume is a driving force for the dynamism of investment in a country's capital market and economy since the fees and interests of all organizations in the capital market are determined based on the tariffs caused by the trading volume, and they will greatly benefit from the volume of transactions rather than benefitting from the increase or decrease in the stock price.

In fact, an increase in trading volume on the charts in charts in the specified time interval could exhibit a level of demand to purchasing the stock that, by controlling the supply level, we can expect stock liquidity in the future. Although a sharp increase in trading volume can be due to negative news, concentration on increasing liquidity level as an operational strategy could bring stability to purchase and sell stocks and generate positive psychological motivations in the capital market. Moreover, it was found that three propositions of enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company (L8) as a proposition of structural/governance mechanisms, increasing the liquidity capability of real assets such as accounts receivable and inventory (L4) as a

proposition of operational (technical) mechanisms, and equalizing the expected return based upon capital cost (L12) as a proposition of investors' trading mechanisms were at the next effective levels, respectively.

In actual fact, enhancing the positive impact of the stock split by equalizing the ratio of stock ownership held by individuals within the company is a strategy that increases the number of shares available to the retailer investors or outsiders by reducing the high proportion of stocks held by specific individuals such as family ownership. By adjusting firms' ownership structures and strategic flexibility to protect the interests of shareholders and investors, this can put the stock liquidity capabilities in line with the positive psychological burden on the market and lead to greater dynamism in stock liquidity. On the other hand, increasing the liquidity capability of real assets such as accounts receivable and inventory will cause the more expected level of stock liquidity in the capital market to be predictable.

Factually, liquid assets such as accounts receivable and inventory and their equivalents can be easily assessed, and very low information asymmetry is taken into account to them. While less liquid assets, including investments and growth opportunities, can be hardly assessed, and the possibility of insider trading about them will be less welcomed in the capital market, which occurs as the result of more information asymmetry. Equalizing the expected return based upon capital cost as another effective proposition in this level refers to the alignment of expected returns based on the firms' capital structure. That is to say, according to investment plans and projects available, companies can generate a level of expectation of their functions on investment returns in the future for investors in terms of financing to prevent the creation of more yields than expectations of the capital market. The existence of these investment facts could be due to the flow of information and the asymmetry of information disclosed that will contribute to better understand the capital market by investors.

Overall, based on the results gained, the most important and effective factors of liquidity in the capital market are the technical (operational) mechanisms, then the investors' trading/behavioral mechanisms, and finally the structural/governance mechanisms. That is, to generate dynamism in the capital market, the operational nature of firms in the supply and sale of stocks must be planned and targeted based on an increase in trading volume and liquidity capabilities of assets so that, by providing timely supply to the capital market, it brings to the most attraction of liquidity for the development of its investment plans and projects and will create an advantage in the competitive

market level compared to other companies. Furthermore, through the development of interaction-oriented programs with shareholders and investors, while increasing their mental satisfaction, firms can help raise the level of awareness and proportionality of future return expectations with the companies' real performance and lead to increasing the success in the competitive market. This necessitates the selection of a cohesive board and a reduction in the influence of ownership concentration to build greater confidence and trust in the firm performance in the capital market. The presence of a dynamic board of directors and the lack of CEO duality can cause investors to look at the firms' performance with a more positive prospect and be more aware of the disclosure of information. In accordance with the results obtained, it is proposed:

While contributing to enhancing the firms' stock liquidity level based on increasing the trading volume of companies' stocks, considering the components of the capital market structure at the firms' operational level can however cause understanding the market to balance supply with the company's demand for stocks and lead to greater dynamism in the company's stock exchanges. In other words, the amount of money generated by balancing the bid price to buy and sell stocks leads to an increase in the level of stock liquidity and to be traded as a reliable cash asset.

Besides, it is suggested that the Stock Exchange and other regulatory bodies, by providing information such as liquidity rating and percentage of trading days and the level of the firms' capital structure, help shareholders and investors better understand the market and industry intended and promote the level of expertise to select the appropriate portfolio for investment so that the level of decision-making is adopted based on the functional realities of industry and companies operating in the capital market, and the presence of stock liquidity bubbles in the capital market to be prevented until the risk of investments is decreased, and the return caused by it to be more balanced and logical by surrounding influential factors. Furthermore, it is recommended that corporate governance to develop their stock liquidity capabilities, by choosing a cohesive and integrated board of directors while increasing the level of effectiveness in internal controls as the front line of flow of information feedback to stakeholders, can contribute to greater dynamism in the company's strategies, such as stock splits based on the firms' performance requirements, and increase the level of competitive advantage in the firms' investments. Eventually, it should be stated that political mechanisms and partisan decisions were not explored in this study because control on it was impossible, and the role of these factors in the form of independent research based on the analysis desired in this research can be taken into account in further investigations.

References

Afzalnia, S. (2019). The effect of stock liquidity on earnings management of Insurance Companies of Tehran Stock Exchange. Journal of Accounting and Management Vision, 2(7), 82-94.

Ahmad, R. (2016). A study of the relationship between liquidity and profitability of standard chartered bank Pakistan: Analysis of financial statement approach. *Global Journal of Management and Business Research*, 16(1): 77-82.

Ahmadpoor, A., Rasayeeyan, A. (2006). The relationship between risk criteria and the proposed price difference between buying and selling stocks on the Tehran Stock Exchange, accounting and auditing, 4(13): 38-22.

Aksoy, Y., Basso, H, S. (2014). Liquidity, Term Spreads and Monetary Policy, The Economic Journal, 51(2): 128-144.

Aldatmaz, S., Ouimet, P., Van Wesep, E, D. (2018). The option to quit: The effect of employee stock options on turnover, Journal of Financial Economics, 127(1):136-151. https://doi.org/10.1016/j.jfineco.2017.10.007

Alnaif, Kh, L. (2014). Stock Liquidity Determination Evidence from Amman Stock Exchange, Asian Economic and Financial Review, 4(12):1894-1905.

Amihud, Y. and Mendelson, H. (2006). Asset Pricing and the Bid-Ask Spread, Journal of Financial Economics, 17(2): 223-249

Amihud, Y., Mendelson, H. (1986). Asset pricing & the bid-ask spread. Journal of Financial Economics, 17(2): 223-249.

Apergis, N., Voliotis, D. (2015). Spillover effects between lit and dark stock markets: Evidence from a panel of London Stock Exchange transactions, International Review of Financial Analysis, 41(2): 101-106 https://doi.org/10.1016/j.irfa.2015.06.002

Ascioglu, N., A., Hegde, Sh, P., McDermott, J, B. (2004). Does Auditor Compensation Lower Market Liquidity? Journal of Business Finance & Accounting, http://dx.doi.org/10.2139/ssrn.511823

Banerjee, S., Gatchev, V, A., Spindt, P, A. (2007). Stock Market Liquidity and Firm Dividend Policy, Journal of Financial and Quantitative Analysis, 42(2): 369-397.

Bateni, L., Poorzamani, Z., Rahnama rood poshti, F. (2013). Investigation of impact of after-market liquidity on IPO price in Tehran Stock Exchange. Asset Management and Financing, 1(1), 63-74.

Bhattacharya. N., Ecker, F., Olsson, P, M., Schipper, K. (2011). Direct and Mediated Associations among Earnings Quality, Information Asymmetry, and

the Cost of Equity. The Accounting Review 87(2): 449-482.

Bilson, C. M., Brailsford, T, J., Hooper, V, J. (2001). Selecting Macroeconomic Variables as Explanatory Factors of Emerging Stock Market Returns. Pacific-Basin Finance Journal, 9, 401-426.

Blau, B, M., Griffith, T, G., Whitby, R, J. (2018). The maximum bid-ask spread, Journal of Financial Markets, 41(3): 1-16. https://doi.org/10.1016/j.finmar.2018.09.003

Cenesizoglu, T., Grass, G. (2018). Bid- and ask-side liquidity in the NYSE limit order book, Journal of Financial Markets, 38(3):14-38. https://doi.org/10.1016/j.finmar.2017.10.002

Chacko, G. C., Jurek, J. W., Stafford, E. (2008). The price of immediacy. *The Journal of Finance*, 63(3): 1253-1290

Chang, K, H., Young, M, N. (2019). Behavioral stock portfolio optimization considering holding periods of B-stocks with short-selling, Computers & Operations Research, 112(1): 104-73. https://doi.org/10.1016/j.cor.2019.104773

Chen, Y., Ge, R., Louis, H., Zolotoy, L. (2019). Stock liquidity and corporate tax avoidance. Review of Accounting Studies, 1-32.

Cheng, Sh, R. (2007). A study on the factors affecting stock liquidity, International Journal of Services and Standards, 3(4):453-475. DOI: 10.1504/IJSS.2007.015227

Chung, K. H., Elder, J., Kim, J. (2010). Corporate governance and liquidity. Journal of Financial and Quantitative Analysis, 45(2): 265-291.

Claessens, S., Djankov, S., Fan, J. P. H., Lang, L, H, P. (2003). When does corporate diversification matter to productivity and performance? Evidence from East Asia, Pacific-Basin Finance Journal, 11(3): 365-392.

Clarke, J., Shastri, K. (2001). Adverse Selection Costs and Closed-End ”unds” ””or king aaperU lUiversity of Pittsburgh.

Collver, Ch. (2009). Measuring the impact of option market activity on the stock market: Bivariate point process models of stock and option transactions, Journal of Financial Markets, 12(1): 87-106. https://doi.org/10.1016/j.finmar.2008.01.002

Dennis, P., Strickland, D. (2003). The effect of stock splits on liquidity and excess returns: Evidence from shareholder ownership composition, Journal of Financial Research, 26(4): 355-370.

Dey, M, K. (2005). Turnover and return in global stock markets, Emerging Markets Review 6(1): 45-67. https://doi.org/10.1016/j.ememar.2004.09.003

Ebrahimi, S., Farnaghi, E. (2016). Factors Affecting Stock Liquidity with Emphasis on Monetary and Financial Policies, Quarterly Journal of Economic Research and Policy, Year 21, 77(1): 36-7.

Fang, V, W., Noe, T, H., Tice, S. (2009). Stock Market Liquidity and Firm Value, Journal of Financial Economics, 94(1): 150-169.

Gorkitiisunthorn, M., Jumreornvong, S. (2006). Insider Ownership Bid-Ask Spread and Stock Splits: Evidence from the Stock Exchange of Thailand, International Review of Financial Analysis.

Grecuhina, K., Timofejeva, M. (2008). The impact of Liquidity providers on the Baltic Stock Exchange. Unpublished Bachelor Thesis, Stockholm University

Hajiannejad (PhD), A., Danesh Sararoodi, S. (2019). Effects of Agency Cost and Liquidity on Tax Avoidance by the Use of Profitability. , 10(1): 115-136.

Jafari Seresht, D., Setarehie, M., Hosseini Nikravesh, Z. (2017). A Study on the Relationship between the Attitudes of Investors and the TSE Liquidity and Economic Growth in Iran. Journal of Securities Exchange, 10(39), 49-69.

Kim, O., Verrecchia, R. E. (1994). Market liquidity and volume around earnings announcements. Journal of Accounting & Economics, 17(1-2): 41-67.

Lacker, D. F., Richardson, S, A. (2004). Fees paid to audit firms, accrual choices and corporate governance, Journal of Accounting Research, 42(3): 625-658.

Levine, R. (1996). Stock Market Development and Long-Run Growth, The World Bank Economic Review 10(2):323-39. DOI: 10.1093/wber/10.2.323

Lyocsa, S., Molnar, P. (2017). The effect of non-trading days on volatility forecasts in equity markets, Finance Research Letters, 23(4): 39-49. https://doi.org/10.1016/j.frl.2017.07.002

Mukityanto, I. (2015). Determinant Factors of Market Liquidity in the Indonesian Equity Market, A Thesis of Doctor of Business Administration, College of Business.

Nadauld, T, D., Sensoy, B, A., Vorkink, K., Weisbach, M, S. (2019). The liquidity cost of private equity investments: Evidence from secondary market transactions, Journal of Financial Economics, 132(3):158-181. https://doi.org/10.1016/j.jfineco.2018.11.007

Neal, R. & Wheatley, S. M. (1998). Adverse selection and bid-ask spread: Evidence form close-end funds, Journal of Financial Markets 10(3): 121-149.

Norvaisiene, R., Stknkeviciene, .. (00))) . Impact of Companies' Internal

Factors on Stock Liquidity in Baltic Markets, Procedia - Social and Behavioral Sciences, 156(26): 543-547. https://doi.org/10.1016/j.sbspro.2014.11.237

Peebles, G., & Wilson, P. (1996). The Singapore Economy, Cheltenham: Edward Elgar

Taddei, F. (2007). Liquidity and Economic Fluctuations, Job Market Paper, http://dx.doi.org/10.2139/ssrn.943067

Tang, D, Y., Yan, H. (2017). Understanding transactions prices in the credit default swaps market, Journal of Financial Markets, 32(2): 1-27. https://doi.org/10.1016/j.finmar.2016.09.005

Wong, W, K., McAleer, M. (2009). Mapping the Presidential Election Cycle in US stock markets, Mathematics and Computers in Simulation, 79(11): 3267-3277. https://doi.org/10.1016/j.matcom.2009.05.007

Bibliographic information of this paper for citing:

Heydari Soltanabadi, Hasan; Panahian, Hosin & Hemmati, Hassan (2020). Designing a Total Interpretive Structural Modeling (TISM) for the Effectiveness Mechanism of Stock Liquidity in the Tehran Stock Exchange Companies. *Iranian Journal of Finance*, 4(2), 40-66.